

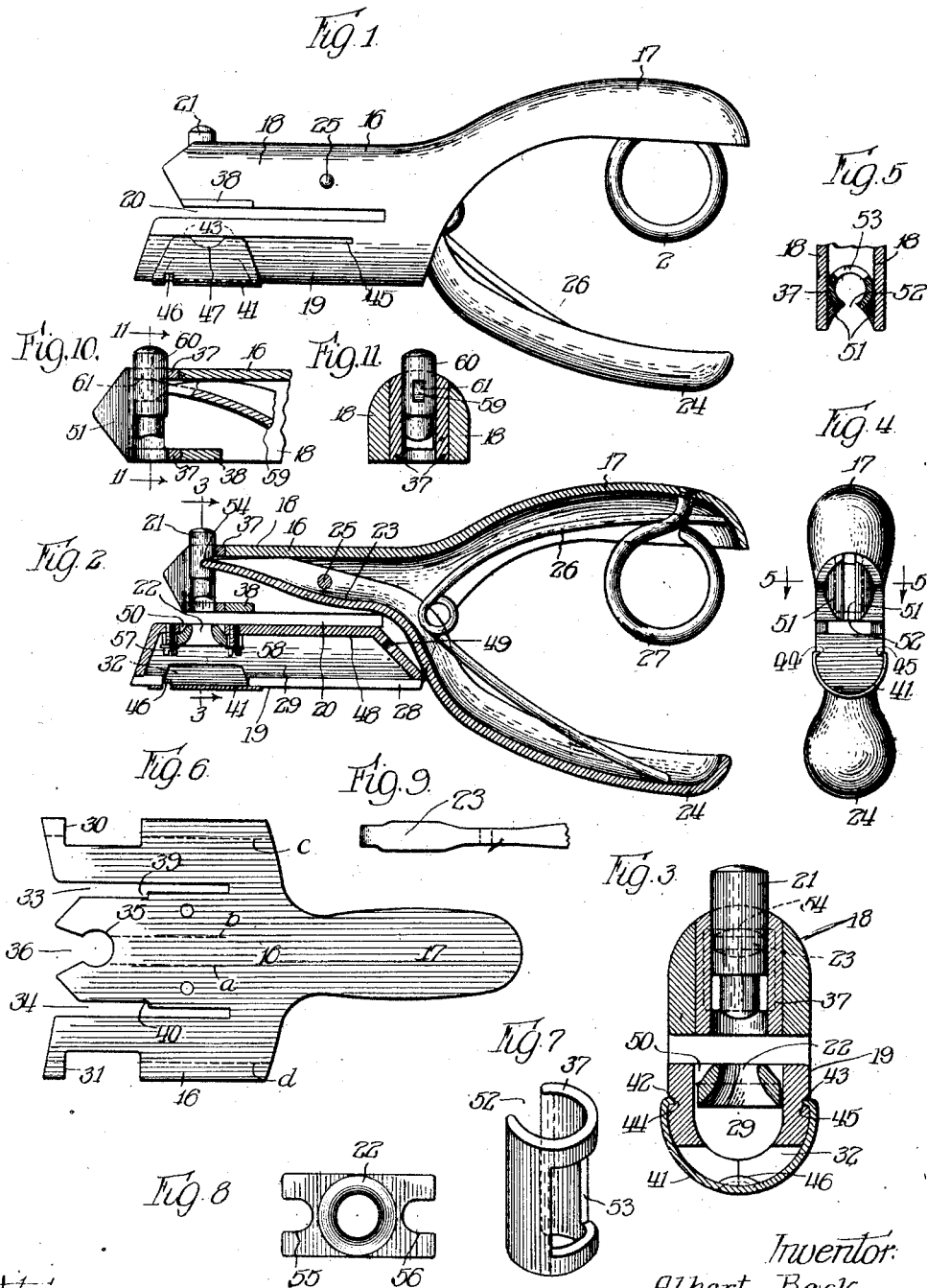
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HAND PUNCH

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HAND PUNCH.

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The invention relates to punches, and particularly to hand punches, such as are usually employed by conductors, waiters, and others for punching tickets, cards, sheets, and the like.

A punch having some of the features and characteristics of the punch referred to in this application is shown and described in United States Letters Patent to Albert Beck, Patent Number 1,417,488, issued May 30, 1922.

Male and female die elements are used in the punch of the invention of this application, and it is a feature of the invention to provide a guide, or bearing, for the male die pin which will assist in maintaining the male die pin in its proper relative position and accurately guide it, so that it will at all times properly cooperate and register with the female die element.

It is another object of the invention to construct the guide, or bearing for the die pin so that the ticket, card, or sheet to be punched may readily be viewed and the point of application of the die pin easily and readily ascertained, thereby permitting the dies to be accurately applied to the desired place on the ticket, card, or sheet.

A further object of the invention is to construct the guide or bearing for the die pin so that it will permit the association with and operation of a lever with said die pin while the pin is in operative position within the guide.

It is a further object of the invention to provide an arrangement of lever and die pin, or more particularly the connection of the lever and the die pin, whereby the pin may be effectively operated in the guide or bearing and always be at right angles to the female die element, and without any rotative movement of the die pin.

An additional object of the invention is to, preferably, form the body, grip, and lever portions of the punch from sheet metal stampings, which are formed into proper shapes and suitably finished and assembled.

One of the objects of the invention is to construct the jaw of the punch adjacent the die pin in such a manner as to strengthen, support, and maintain the guide or bearing in its proper place in the jaw and, at the same time, close the end of the jaw between the sides thereof and the bearing to keep

extraneous matter from interfering with the operating parts of the punch and also to improve the appearance of the punch.

Another object of the invention is to provide the female die element of the punch with a construction which will permit the position thereof to be varied to thereby cause it to be placed in alignment with the male die pin and held in this position.

A further object of the invention is to provide a punch of the character described with a chamber, into which the punchings from the tickets, cards, sheets, and the like, may fall and be held; to provide this chamber with an opening, whereby the punchings may be removed from the chamber, and to provide a closure for the chamber, which closure is held in slidable relation to the punch by means of lips on the closure extending into grooves provided in the body portion of the punch.

It is a further object of the invention to provide a stop for limiting the movement of the closure with relation to the opening in the chamber and to form this stop in the closure.

The invention will be explained and more readily understood when read in conjunction with the accompanying drawings, in which various modifications, of which the invention is susceptible, are illustrated, it being, however, obvious that changes and modifications may be made without departing from the spirit of the appended claims forming a part hereof.

In the drawings:

Figure 1 is a side elevation of a punch constructed according to one embodiment of the invention.

Figure 2 is a central, longitudinal section of the punch illustrated in Figure 1.

Figure 3 is a section taken on line 3—3 of Figure 2.

Figure 4 is an end elevation of the punch illustrated in Figures 1, 2, and 3 but omitting the die pin.

Figure 5 is a section taken on line 5—5 of Figure 4.

Figure 6 is a plan view of a blank or stamping which, when formed, produces a body portion and a grip portion of the punch illustrated in Figures 1 and 2.

Figure 7 is an enlarged, perspective view of the guide element, or bearing, employed

for guiding the movable punching die pin illustrated in Figures 2 and 3.

Figure 8 is a plan view of the female die element of the punch.

Figure 9 is a top plan view of a portion of the lever shown in Figures 2 and 3, showing the end which connects with the die pin.

Figure 10 is a sectional view of a fragment of the punch illustrated in Figures 1 and 2, showing a modified form of connection which may be employed between the grip lever and the die pin.

Figure 11 is a section taken on line 11—11 of Figure 10.

In the punch of the invention there is employed a body portion 16 having a grip portion 17 extending therefrom, the body portion 16 being formed to provide the jaws 18 and 19, which are separated by a slot 20, into which is inserted the ticket, card, or sheet to be punched. The jaws 18 and 19, respectively, carry the die cutting elements of the punch, i. e., the male punching die pin 21 and the female die element 22. The die actuating lever 23, having the grip portion 24, is pivotally secured to the body portion through the medium of the pin 25. The lever 23 is associated with the punching die pin 21 and is constructed so as to actuate the die pin 21 and cause it to be brought into co-operative relation with the female die element, 22, to punch the tickets, cards, and sheets. An expansion spring 26 is arranged between the grip portions 17 and 24 so that the grip portions will normally assume an extended relation. One end of the expansion spring is connected to the finger ring 27 and the other end rests against the inner portion of the grip 24.

The body portion 16, with its grip 17, is formed of a suitable blank, which is cut out or stamped in a manner to provide the structure illustrated in Figures 1 and 2 when bent into shape. The blank is clearly shown in Figure 6 of the drawings. When the blank is bent along the dotted lines *a*, *b* it will provide the side portions of the jaws 18 and 19. The blank will then be bent inwardly along the dotted lines *c* and *d* and secured together in any suitable manner and thus form a wall 28 of a chamber 29, which is produced in the lower jaw 19 of the punch. This chamber is formed to hold the punchings from the tickets, cards, and sheets. The blank illustrated in Figure 6 is cut out, as indicated at 30 and 31, which provides the opening 32 when the blank is bent into the shape shown in Figures 1 and 2. The opening thus formed provides a means through which the punchings from the tickets, cards, and sheets may be dropped from the chamber 29. When the blank is formed in the shape illustrated in Figures 1 and 2 the cut out portions 33 and 34 will provide the slot 20.

The blank is further provided with the aperture 35 and the V-shaped opening 36. The aperture 35 provides a means for receiving the guide or bearing 37 for the die pin 21. The aperture 35 communicates with the V-shaped opening 36 and provides a space which will permit the operator to view the indicia which are punched from the ticket, card, or sheet. The provision of the openings described, together with the opening in the guide or bearing 37, more particularly hereinafter described, assists in the accurate application of the die 21 to the ticket, card, or sheet. A plate 38 is suitably arranged in the notches 39, 40 of the blank and secured therein. The plate 38 is apertured to receive the guide or bearing 37.

The opening 32, formed by the cut out portions 30 and 31, is closed by a slidable closure 41, which is bent to partially surround the lower jaw 19 of the punch and is provided with the inwardly extending flanges or lips 42 and 43, which extend into and slide in the slots or grooves 44 and 45 in the opposite side walls of the chamber 29 of the jaw 19. The closure 41 is provided with an abutment 46 to limit the movement of the closure which engages the opposite extremities of the opening 32 and limits the movement of the closure in both directions. The construction of the abutment 46 and the cut out 47 on each side of the closure 41 furnish means to move the closure with relation to the jaw 19. The top and end walls of the chamber 29 are formed by the plate 48 which is secured and held between the side walls of the chamber 29 and has an aperture or vent 49. The plate 48 is provided with an aperture 50, into which extends the annular flange of the female cutting die 22.

The guide, or bearing, 37, as clearly shown in Figure 7, preferably, is tubular and is designed to be mounted in the aperture 35 in the jaw 18 and the aperture in the plate 38. It is held with relation to the jaw 18 by being brazed or welded thereto. In the brazing or welding process enough material is used to completely close the end of jaw 18, to the outer slot in the guide 37, thus providing fillets 51, 51 between the outer slot in the guide 37 and the side walls of the jaw 18, as illustrated in Figures 4 and 5. The fillets 51, 51 not only assist in strengthening, supporting, and maintaining the guide or bearing in its proper place in the jaw, but prevent dirt, dust and other foreign material from becoming lodged in the guide member and in the rear thereof and prevent interference with the die pin 21.

The die actuating lever 23, with the grip 24, is also formed of a suitable blank which is cut out or stamped so as to provide the structure illustrated in Figures 2 and 9 when bent and pressed into shape.

The guide or bearing 37 is provided with an outer slot 52 which is arranged, when associated with the parts forming the punch, so that it coincides with the throat between the aperture 35 and the V-shaped opening 36. The bearing 37 is further provided with an inner, slotted aperture 53, through which one end of the die actuating lever 23 is passed into engagement with the slot 54, which is arranged transversely to the length of and provided in the die pin 21. The transverse slot in the die pin 21 extends from one side of the die pin to the other, 180°, or substantially so. This is clearly shown in Figures 2 and 3. The walls of the slot or opening 54 in the structure illustrated in Figures 1 and 2 are flared so that contact between the die actuating lever and the wall of the slot in the die pin is provided during the movement of the die pin by the lever.

The construction of the female die element 22 is substantially similar to that disclosed in the patent above referred to, except that it is provided with means whereby it may be moved into alignment with the movable die pin. To accomplish this the female die element 22 is provided with the elongated apertures 55 and 56, which are formed to permit the screws 57 and 58 to be passed there-through and into engagement with a screw-threaded opening in the member 48, which provides the upper wall of the chamber 29. The arrangement described produces a means whereby the female die element 22 may be moved with relation to the male die pin 21 to cause the two elements to be brought into accurate alignment with each other.

In Figures 9 and 10 there is shown a modified construction of the grip lever and the die pin and also the means of connecting them to each other. The structure illustrated in these figures differs from that illustrated in Figures 1 and 2 in the connection between the lever 59 for actuating the die pin 60 and the said pin. In this structure the flat rounded end of the actuating lever 59 is inserted into a slot 61 extending through the die pin 60 transversely of the length thereof. The walls of the transverse slot 61, with which the rounded end of the actuating lever 59 engages, provide a contact between the faces of the walls and the end portion of the actuating lever 59 so that the lever when operated will actuate the die pin 60. The guide or bearing 37 illustrated in Figure 7 is adapted to be used in connection with the structure of Figures 10 and 11.

From the foregoing description of the various structures, among other advantages, it will be manifest that an efficient arrangement is provided for holding and maintaining the die pin in its proper relative position; that the die pin is always accurately guided throughout its entire movement toward and away from the female die element during the

punching operation; that the die pin is always at right angles to the female die element; that the female die element may be adjusted to cause it to be aligned with the die pin and may be held in this last named position; that the die elements and the guide or bearing may be formed of relatively different material from that of which the body of the punch is formed, thereby substantially increasing the wearing qualities of the punch, and that various means of connection between the die pin actuating element and the die pin may be employed.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a tubular guide for the male punching element, said guide being provided with means whereby the actuating member extends into said guide and into engagement with said male punching element.

2. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a tubular guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible.

3. In a device of the character described, the combination of a body member, and an actuating member cooperatively connected to the body member, male and female punching elements, a guide for the male punching element, said guide including a tubular element having an opening whereby indicia on the article to be punched are visible.

4. In a device of the character described, the combination of a body member, an actuating member cooperatively connected to the body member, male and female punching elements, said female punching element having a slot whereby it may be varied and adjusted with respect to the male punching element, and means for holding said female punching element in adjusted position.

5. In a device of the character described, the combination of a body member and an actuating member, male and female punching elements carried by the body member, said body member having a chamber into which the punchings may lodge, an opening provided in said chamber, a closure for the opening, said closure having a stop oper-

able within the opening which cooperates with an edge of the opening to limit the movement of the closure.

6. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member having portions which, respectively, carry male and female punching elements, and a guide member for the male punching element, said guide being mounted in said body member and being provided with means, whereby indicia on the article to be punched are visible, the end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting.

7. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said portion of the body member which carries said male punching element being provided with means whereby said guide is maintained in its mounting.

8. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said body member having a chamber into which the punchings may lodge, an opening provided in said chamber, a closure for the opening, said closure having a stop which cooperates with an edge of the opening to limit the movement of the closure, the end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting.

9. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching ele-

ments, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said body member being provided with a chamber into which punchings may lodge, an opening provided in said chamber, a closure for the opening, said body member having a groove, and said closure having means which cooperate with the groove to hold the closure with relation to said body member, the end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting.

10. In a punch of the character described, the combination of a body member and an actuating member cooperatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said body member being provided with a chamber into which punchings may lodge, an opening provided in said chamber, a closure for the opening, said body member having a groove, and said closure having means which cooperate with the groove to hold the closure with relation to said body member, said closure having a stop which cooperates with an edge of the opening to limit the movement of the closure, the end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting.

11. In a punch of the character described, the combination of a body member and an actuating member co-operatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said body member having a chamber into which the punchings may lodge, an opening provided in said chamber, a closure for the opening, said closure having a stop which co-operates with an edge of the opening to limit the movement of the closure, the

end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting, said male punching element having a transverse opening with flared walls extending from one side of the male punching element to the other substantially 180°, the end of said actuating member contacting with the walls of said opening and being adapted to reciprocate said male punching element at right angles to said female punching element.

12. In a punch of the character described, the combination of a body member and an actuating member co-operatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said male punching element having a transverse opening with flared walls extending from one side of the male punching element to the other substantially 180°, the end of said actuating member contacting with the walls of said opening and being adapted to reciprocate said male punching element at right angles to said female punching element.

13. In a punch of the character described, the combination of a body member and an actuating member co-operatively connected to the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and

said guide being provided with means whereby indicia on the article to be punched are visible, said male punching element having a slot extending entirely through it transverse of its length, the end of said actuating member being rounded and adapted to move in said slot and contact with the walls thereof, and being further adapted to reciprocate said male punching element at right angles to said female punching element.

14. In a punch of the character described, the combination of a body member and an actuating member co-operatively connected with the body member, said body member being provided with portions which, respectively, carry male and female punching elements, a guide for the male punching element, said guide being provided with means whereby the actuating member may be associated with said male punching element, and said guide being provided with means whereby indicia on the article to be punched are visible, said body member having a chamber into which the punchings may lodge, an opening provided in said chamber, a closure for the opening, said closure having a stop which co-operates with an edge of the opening to limit the movement of the closure, the end of said body member which carries said male punching element being provided with fillets which extend from the side walls of said body to the guide for the male punching element and support said guide in said mounting, said male punching element having a slot extending entirely through it transverse of its length, the end of said actuating member being rounded and adapted to move in said slot and contact with the walls thereof, and being further adapted to reciprocate said male punching element at right angles to said female punching element.

In witness whereof, I hereunto subscribe my name this 26th day of June, A. D., 1923.

ALBERT BECK.